

A FLORA OF THE FARALLON ISLANDS, CALIFORNIA

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INTRODUCTION

The South Farallon Islands are a group of islands and rocks situated off the coast of California, 20 miles from Point Reyes, the nearest point on the mainland. They are part of the Farallon Ridge, which extends parallel to the coast (in a northwest-southeast direction) almost on the edge of the continental shelf, from the vicinity of Point Reyes to that of the Golden Gate. Other elevations along this ridge are the Mid Farallons, about $2\frac{1}{2}$ miles northwest of the South Farallons; the North Farallons, a group of five rocks about 5 miles farther northwest; and farther northwest still, Noonday Rock, almost awash, and Cordell Bank, 20 fathoms below the ocean surface. Geologically similar to Point Reyes, they are of a granite formation like that found at the Point Reyes Lighthouse (Hanna, 1951).

For three months, from early April to mid July, 1968, while studying birds on the South Farallon Islands, I collected plants and took notes on the vegetation. I also worked on the islands in June, 1969, May through July, 1970, and mid-May to mid-June, 1971. I did not collect plants in the last 3 years, but noted any change in status. Only two papers (Blankenship, 1892; Ornduff, 1961) have previously been published on the plants of the islands. Blankenship, who was on the islands from July 3-6, 1892, collected 28 species, 11 native and 17 introduced plants. Ornduff, who was there for a short time in May, 1960, found only 20 species, 10 native and 10 introduced, but noted the addition of 3 new ones to the islands. I was there for a somewhat longer time and while I missed 3 of Ornduff's plants I found 14 previously unnoted species most of which probably arrived since Blankenship's visit. They are interesting in this respect. I found 36 species, 13 native and 23 introduced.

I did all my work on the south Farallon Islands, the other projections along the Farallon Ridge being inaccessible. However, the other projections are merely rocks. Their vegetation is probably scarce and similar to that on the cliffs of the South Islands.

The South Farallon Islands comprise about 92 acres (Henry Robert, pers. comm.) They have been uplifted and there are sea terraces around the islands: one at 27 and one at 50 feet above the sea (Blankenship, 1892). The one at 50 feet is the more extensive, reaching a width of 300 yards on the south and 75 yards on the north and east while it is little noticeable on the west.

The temperature on the islands is even throughout the year. During a ten-year period the average maximum was 55° F (58° in the summer;

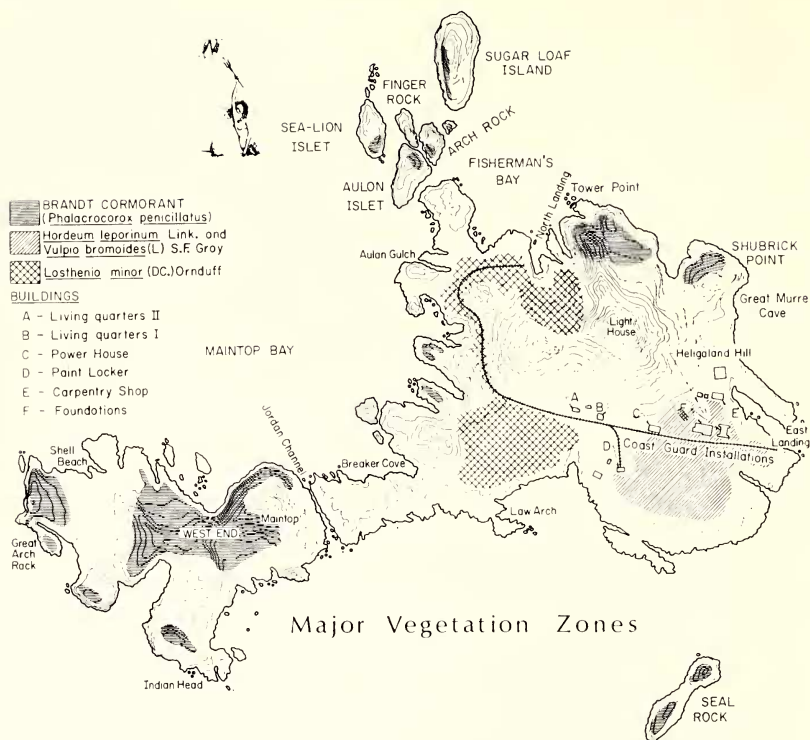


FIG. 1. Map of the Farallon Islands, showing the major vegetation zones.

54° in the winter) and the average minimum was 51° (53° in the summer; 48° in the winter). The rainfall over a ten-year period averaged 25.29 inches yearly. It is concentrated in the winter. The sky is generally clear during the spring and fall; fog prevails during the summer.

GENERAL VEGETATION

The major vegetation zones are shown on the map. During most of my stay West End was a restricted study area so that I have no data on the plants there. Seal Rock, Sugar Loaf Rock, Finger Rock and Sea-Lion Islet were inaccessible but their vegetation is sparse and probably similar to that of the rocky cliffs on the main island. Except for the 50-foot sea terrace, the main island is largely rocky cliffs which offer little foothold for plants. Among the rocks the main plants are *Erigeron glaucus*, *Lasthenia minor* subsp. *maritima*, *Spergularia macrotheca* and *S. marina*. The extensive 50-foot terrace, on the other hand, does offer a good site for thick vegetation. In the north (above North Landing) and in the south the vegetation is largely *Lasthenia minor* which grows in thick mats up to 4 dm tall. The soil here is soft and loose. These areas (as well as the hills and rocky cliffs) are used by nesting Western Gulls,

Larus occidentalis, who use the *Lasthenia* for nest material. Above North Landing the *Lasthenia* grows thick with *Stellaria media* which is lacking in the *Lasthenia* vegetation of the south. In the southeastern and eastern portions of the island *Lasthenia* is replaced by a grassy vegetation. *Hordeum leporinum* and *Vulpia bromoides* are the main plants in this area where the soil is not as loose and is matted with grass roots. In the northern and northeastern parts of the island, the 50-foot terrace is used by nesting colonies of Brandt Comorants, *Phalacrocorax penicillatus*. The birds' activities severely restrict if not completely inhibit plants from growing in this well fertilized area.

There are other distinct vegetation zones. Between the living quarters and the power house and also just south of the carpentry shop where the soil is thin, fine and gravelly, the vegetation is of small grasses: mainly *Vulpia bromoides* sparsely interspersed with *Poa annua*. Directly in front of the living quarters the soil is hard and gravelly. *Plagiobothrys reticulatus*, *Crassula erecta*, *Clatonia perfoliata*, and *Cornopus didymus* grow here. Also, east of the power house—along the walks and tram tracks and around the foundations—*Sonchus asper*, *S. oleraceus*, *Senecio vulgaris* and *Chenopodium murale* are found.

The major precipitation is during the winter. By April the rainy season is over; during my stay we experienced only one brief mizzle. Consequently, when I arrived the island was green and many of the plants were well advanced in their flowering and others like the grasses were far along in their seeding.

Following is a species by species list of the plants of both islands. Unless otherwise noted the plants were found by both Blankenship and Ornduff. Any change in status since 1968 is noted. The names are given according to Munz (1959) and where they have been changed Munz's names are in synonymy. The asterisked names are those of introduced species. The flowering dates pertain only to the time of my stay, April 3 to July 10, 1968. Specimens are in the Dudley Herbarium, except as noted.

Amsinckia spectabilis F. & M. Added to the island list by Ornduff, this species is found sparsely in the southern and southeastern sections of the island: along the tram tracks and among the foundations. Throughout my stay.

**Anagallis arvensis* L. This species grows along the tram tracks. The population consists almost exclusively of the pin-orange variety, the blue variety not being found until 1971. In that year a small patch of only a few plants was found just south of the tram tracks near East Landing. Throughout my stay.

**Bromus diandrus* Roth (*B. rigidus* Roth). This grass was recorded by neither Blankenship nor Ornduff. It is found scatteringly in small clumps in the southern and southeastern portions of the island. From my arrival to mid April.

Calandrinia ciliata (R. & P.) DC. var. *menziesii* (Hook.) Macbr. Not

previously reported, this species is sparsely found along the tram tracks. From my arrival to mid April.

**Chenopodium murale* L. Probably Blankenship's *C. album* L. and Ornduff's *C. sp.* This species is found commonly along the tram tracks and sidewalks in the southeast. Throughout my stay.

**Cirsium vulgare* (Savi) Ten. Not previously reported, this large thistle now grows around the carpentry shop. Found in 1968 and 1969, the plant was not found in 1970 and 1971 and seems to have disappeared. Mid May to my departure.

Claytonia perfoliata Donn (*Montia perfoliata* (Donn) Howell). This is found commonly along the tram tracks. From my arrival to mid April.

**Cornopus didymus* (L.) Smith. Not listed before. I found only one specimen of this plant in front of living quarters #2. It had already gone to seed when I found it in mid June.

**Cotula australis* (Sieb.) Hook. f. Ornduff added this species to the list. It is commonly found along the tram tracks. From my arrival to mid May.

Crassula erecta (H. & A.) Berger (*Tillaea erecta* H. & A.). This inconspicuous plant is found with *Plagiobothrys reticulatus* where the soil is fine, gravelly, and firm. It is found commonly around the living quarters, on the path to the paint locker, and between the living quarters and the power house and sparsely in the eastern part of the island in such places where these conditions prevail. Throughout my stay.

**Cupressus macrocarpa* Hartw. Planted. This species was reported by neither Blankenship nor Ornduff. However, there was once a large grove of cypress near the fog horn but at present there are only two on the island: next to living quarters #1. The trees are about 25 feet tall.

**Cymbalaria muralis* Gaertn., Mey., & Scherb. A new species to the island list. There is one patch of this plant at the back door of living quarters #1. While I found this plant in 1968, I did not find it in 1969, 1970, or 1971. Throughout my stay.

Erigeron glaucus Ker-Gawl. This plant is found sparsely on all the rocky cliffs on the island. Late April to my departure.

**Erodium cicutarium* (L.) L'Her. This plant is found along the tram tracks between the living quarters and the power house. From my arrival to late April.

**Erodium moschatum* (L.) L'Her. The distribution and flowering of this species are similar to those of the preceding *Erodium*.

Heliotropium curassavicum L. var. *oculatum* (Heller) Tidestrom. A new plant to the island. There is a small patch of this plant in front of the carpentry shop. Early June to my departure.

**Hordum leporinum* Link. This grass is common in the south and southeastern portions of the island where it grows thick with *Vulpia bromoides*. From my arrival to mid April.

Juncus bufonius L. I was unable to find this plant which was reported

by both Blankenship and Ornduff.

Lasthenia minor (DC.) Ornduff ssp. *maritima* (Gray) Ornduff (*Baeria minor* (DC.) Ferris ssp. *maritima* (Gray) Ferris). Locally known as Farallon Weed, this composite is the most abundant plant on the Islands. It is found sparsely among the rocks but thickly in the open areas in the northern and southern parts of the island (see map). Throughout my stay.

**Lavatera arborea* L. Not previously reported. There was one small shrub of this species just north of Heligoland Hill. It did not bloom in 1968 but when I returned for a day on April 2, 1969, it was blooming. In 1969 there was an additional shrub of this species (not blooming) between the power house and living quarters #1. In 1970 and 1971 I was unable to find any plants of this species.

Phyllospadix torreyi Wats. This marine species was missed by both Ornduff and myself. However, Robert Setzer recently collected a specimen (CAS) on the island.

**Pinus radiata* Don. Planted. This species has not previously been reported. There is one representative: just west of Heligoland Hill. The tree is only about 10 feet tall but its branches extend radially to a radius of about 7 feet.

Plagiobothrys reticulatus (Piper) Johnst. var. *rossianorum* Johnst. This small plant is found with *Crassula erecta* where the soil is fine, gravelly and firm. It is found commonly around the living quarters and the power house, and on the path to the paint locker and sparsely in the eastern portion of the island in such places where the soil is as described. From my arrival to the end of April.

**Poa annua* L. This small, inconspicuous grass is found sparsely where the soil is thin, fine and gravelly in the south and southeast and around the living quarters. From my arrival to the end of April.

**Polypogon monspeliensis* (L.) Desf. This grass recorded by Ornduff is likely the *P. littoralis* of Blankenship. Rare and hard to find, it grows on the path to the lighthouse and in the southeastern part of the island. It is found where the soil is thin. I know nothing about its flowering dates.

Psilocarphus tenellus Nutt. var. *tenellus*. I was unable to find this plant which was listed by both Blankenship and Ornduff.

Sagina occidentalis Wats. I was similarly unable to find this plant which was listed by both Blankenship and Ornduff.

**Senecio vulgaris* L. Not previously reported, this composite is found commonly in the southeast: along the tram tracks and sidewalks, among the foundations and near the water in gullies such as that in back of the carpentry shop. Mid April to my departure.

**Sonchus asper* L. Previously only this *Sonchus* has been recorded. It is found with the last species in the southeast: along the tram tracks and sidewalks and among the foundations. Mid April to my departure.

**Sonchus oleraceus* L. This *Sonchus*, found in the southeast, grows

with the preceding two species among the foundations and along the tram tracks and sidewalks. Mid April to my departure.

Spergularia macrotheca (C. & S.) Heynh. This is found commonly among the rocks and where the soil is thin. It grows in the north, on Lighthouse Hill and in the southwest (west to Jordon Channel and probably on West End). It is found sparsely in the southeast. Throughout my stay.

Spergularia marina (L.) Griseb. Reported by Blankenship, this was probably Ornduff's S.sp. It grows commonly among the rocks and where the soil is thin and in the southern and southeastern portions of the island. Throughout my stay.

**Stellaria media* (L.) Vill. This was reported by Blankenship but missed by Ornduff. It grows along the tram tracks, around the carpentry shop and on the slopes above North Landing. From my arrival to the end of April.

**Tetragonia tetragonoides* (Pall.) Ktze. This was not recorded earlier. There is one large patch of this species between the living quarters. Throughout my stay.

Trifolium fucatum Lindl. Not reported earlier. There are two patches of this clover on the path between the power house and living quarters #1. From my arrival to mid May.

Trifolium variegatum Nutt. Not found previously. There is one patch of this between the living quarters and another on the path between living quarters #1 and the power house. From my arrival to mid May.

**Urtica urens* L. This inconspicuous plant grows around the living quarters and around Heligoland Hill. Throughout my stay.

**Vulpia bromoides* (L.) S.F. Gray (*Festuca dertonensis* (All.) Aschers. & Graebn.). It is likely that this species recorded by Ornduff is Blankenship's *F. myuros* L. It grows commonly and thickly with *Hordeum leporinum* in the south and southeast. Smaller plants also grow where the soil is thin and gravelly: around the carpentry shop and around the living quarters.

**Zantedeschia aethiopica* (L.) Spreng. Obviously an escape from the gardens, this plant still grows among the foundations in the southeast and in front of the carpentry shop where a garden used to be. From my arrival to mid June.

In the above list I have already included those species listed by Ornduff which I did not find. There were ten of Blankenship's species which neither Ornduff nor I were able to find. Most of these have probably disappeared from the island since Blankenship's visit. Blankenship found only one specimen of *Polystichum munitum* (Kaulf.) Presl which he collected. The fern has probably not managed to reestablish itself. Blankenship mentioned six species restricted to the gardens: *Avena fatua* L., *Malva parviflora* L., *Melilotus indica* (L.) All., *Polygonum aviculare* L., *Trifolium bifidum* Gray var. *decipiens* Greene, and *T. microcephalum* Pursh. Ornduff has suggested that after the gardens

were abandoned rabbits destroyed the populations of these plants. Finally, *Medicago hispida* Gaertn., and *Cerastium glomeratum* Thuill. have not been reported since Blankenship.

The flora is a small one. I think this is due, as Ornduff says, to the strong edaphic conditions and the predation of the rabbits which were introduced on the islands during the latter half of the last century. One thing worth noting, however, is the high number and high proportion of nonnative species on the Farallons. This is due to the large amount of human activity. The islands are inhabited by United States Coast Guard servicemen who operate the lighthouse. Until recently a garden was maintained. A mule was kept on the islands from the mid 1800's through the early 1900's. Many plants may have arrived with the animal's feed. Finally, a Coast Guard boat visits the island about once a week.

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LITERATURE CITED

- BLANKENSHIP, J. W., and C. A. KEELER. 1892. On the natural history of the Farallon Islands. *Zoe* 3:144-165.
- HANNA, G. D. 1951. In O. P. JENKINS (ed.) guidebook Geologic of the San Francisco Bay Counties. Div. of Mines, San Francisco, Calif.
- MUNZ, P. A. 1959. A California flora. Univ. California Press, Berkeley.
- ORNDUFF, R. 1961. The Farallon flora. *Leaff. West Bot.* 9:139-142.